

SOME REASONS WHY THE ROCHESTER NOMENCLATURE CANNOT BE REGARDED AS A CONSISTENT OR STABLE SYSTEM.

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SINCE the vivacious discussions of 1890 to 1895 comparatively little has been published in America upon botanical nomenclature. While this lull in the conflict between opposing and often too sharply expressed opinions is grateful to all concerned, the difficult and intricate nomenclature question is as far from settlement as ever. The subject may seem trite and tiresome, but the present divergent practices in naming plants are not only a source of great annoyance but offer a serious impediment to the successful advance of classification. The gravity of the whole issue is, therefore, so great as to justify every renewed effort toward a better general understanding of the subject, since this alone can lead to a final and satisfactory settlement.

Some years ago a number of our American colleagues, with conscientious efforts and praiseworthy intentions, devised and offered to the world a nomenclature reform, hoping that it would gain ground and soon meet with general approval and adoption. This, however, has not been the case, nor has its ill success been due to prejudice. While among its opponents there may have been some, it is true, who, with little knowledge of the subject, opposed the system merely because it involved changes of familiar names, there were others who objected to the Rochester nomenclature because it seemed to have certain inherent defects of a nature to preclude ultimate success. During the years which have passed since the Rochester and Madison meetings little effort has been made to correct these defects and the energy of the reformers has been largely devoted to establishing their code by putting it into immediate use in their publications and herbarium work. The fact that

this has been done in disregard of the opinions and expressed wishes of a very large number of their colleagues does not concern us here, except as showing an unfortunate over-confidence on the part of the reformers. What they should realize, however, is that no number of monographs or floras, published in accordance with the Rochester code, will establish a single principle or a single name, which does not appeal to future botanists as reasonable. Surely those who have themselves discarded hundreds of names which had stood unchallenged for nearly a century should not feel that they are establishing their system merely by putting it into use. The only way it can be established is by making it so reasonable and consistent that it will command general respect and approbation.

Readily accepting the now generally admitted fact that 1753 is the most desirable date of departure, the writer can see only two logical methods of codifying botanical nomenclature. According to the first of these modes, priority both of time and place must be unrestricted from the date of starting. Each plant must bear *its earliest designation*, and each name must be used *only in its earliest signification*. Such a system would involve a hitherto unprecedented change but is both conceivable and logical. The other method, while also recognizing the great value of priority in determining the proper names of plants, would seek to limit this principle by such qualifications as would be necessary to retain as great a part as possible of the current nomenclature. In the first or absolute system no exceptions can be permitted, usage may not be taken into account, and in fact nomenclature must be torn down to the point where it can be rebuilt with regularity and symmetry. The language of systematic botany must, in such a system, start almost afresh and follow unswervingly certain theoretical principles. In the other system, principles must also be sought out and followed, but here, like the rules of grammar, they should be based upon usage and derive their guiding power by stating, generalizing, and correlating usage and not by defying it. Either system to be effective requires a fairly general

agreement of botanists. It is not my purpose here to discuss the relative merits of the absolute and usage systems, for that has already been done *ad nauseam*. I merely wish to show that the Rochester nomenclature corresponds to neither of these systems; that it falls between them; and that while claiming to rest upon a firm basis of priority, it derives many of its principal names from usage and in defiance of a consistent priority.

Within the last few years two kinds of priority have been recognized, that of time of publication and that of relative position in a given work. The latter, "priority of place," is as definite and almost as necessary to an absolute system of reform as the more generally recognized priority of time. Both have been acknowledged principles in the Rochester reform, but the reformers in their application of the "priority of place" have been neither thorough nor consistent. While they have felt it necessary to discard many well-established names on account of this principle, they have failed to apply it when determining which of several species is to be regarded as the type of a genus. By way of illustration we may consider the Linnæan genus *Erysimum*, which, according to the theory of the Rochester code, dates from its treatment in the first edition of the *Species Plantarum*. Now in this work the generic name (unaccompanied by generic character) is followed by four well-known species, namely, *E. officinale* L. (*Sisymbrium officinale* Scop.), *E. Barbarea* L. (*Barbarea vulgaris* R. Br.), *E. Alliaria* L. (*Alliaria officinalis* Andrz.), and *E. cheiranthoides* L. It will be observed that these species are now relegated to four different genera, but strangely enough our reformers, while professing to follow priority as the "fundamental principle" of nomenclature, have selected not the first but the last species of the Linnæan genus to retain the name *Erysimum*. In other words, they have here abandoned the much-extolled principle of priority and have adopted one of usage. They have taken *Erysimum cheiranthoides* as the true type of the genus, not because it was the first species to bear that name, but because it was the species which had been so treated by subsequent usage. Nor is *Erysimum* an

isolated instance of this kind. The same departure from a strict priority has been made in the case of *Sisymbrium*, *Erigeron*, *Poa*, *Senecio*, *Brassica*, and in fact many other important genera.

Now I would not be taken as saying that usage is not a very excellent guide in such matters, but would merely emphasize the fact that if the Rochester nomenclature, in last analysis, really rests upon usage and not upon priority, it loses at once that absolute and decisive character which has been represented as its chief advantage. If we are not to have a consistent application of priority, why overthrow hundreds of established names to accomplish a reform? If priority is to be modified at all, why not restrain it effectively by some such excellent provision as the fifty-year limit of the Berlin botanists? Let us have either a nomenclature of consistent principles or one of maximum immediate convenience. As I have said, the Rochester nomenclature appears to be neither. It overthrows too much and fails to establish its new structure upon a logical basis.

I am quite aware that the American ornithologists have stopped in their application of priority at essentially the same point as the Rochester and Madison reformers. The ornithologists' nomenclature, however, possesses the advantage that their code clearly recognizes and defines this departure from its usual principles. The botanical code, on the other hand, wholly neglects to state any such exceptions, and accordingly the usage of the Rochester reformers is to this extent inconsistent with their own code. The exception in the case of the ornithologists has been accomplished merely by general agreement. Of course, if such agreement can be obtained, any system of nomenclature whatever, whether consistent or inconsistent, can be made serviceable. But no system which is not in itself logical is likely to stand the test of time.

It cannot be denied that to take any species other than the first as the type of a genus involves a grave inconsistency with the other principles of the reform.

The much advocated principle of "once a synonym always

a synonym," for instance, states that a name once applied in one sense may not be used subsequently in any other, and this directly affects the case in hand; for to return to the example of *Erysimum*, the first species of this genus was a *Sisymbrium*. In other words *Erysimum* was first employed to designate what we now call *Sisymbrium*. As we read down the 660th page of the *Species Plantarum* and arrive at the last line in the description of *E. officinale*, we have reached a point where the genus *Erysimum* has already been published. The needful generic name has been coupled with a definitely characterized and well-known species. If it is not a published genus when we have reached this point, why is any monotypic genus in the *Species Plantarum* to be so regarded? But *Erysimum*, thus established by the publication of its first species, applies only to what we now call *Sisymbrium*, and any transfer of the generic name to another genus, is not only opposed to "priority of place" but contrary to the principle of "once a synonym always a synonym," which expressly forbids such a change in the use of a name. The fact that Linnæus himself, further down the same page, published certain other species, which he considered congeneric, or that *Erysimum* was by later authors differently applied, should have to the mind of the consistent advocate of priority no weight whatever. In this connection I recall the words of Professor Britton :¹

I accepted *Tissa* rather than *Buda* for the simple reason that it stands first on the page in Adanson's *Familles*. That is priority, I am sure. The fact that Dumortier named some species under *Budah* as, to me, nothing to do with the case.

In the *Species Plantarum*, as I have above implied, there are many other important genera of like composite character, and interpreted by the reformers with similar disregard of their own principles. Thus the first *Sisymbrium* was a *Nasturtium*, and for those who would follow consistently the principle of priority of place, this should stand as the type of a genus *Sisymbrium*, which must embrace all our present species of *Nasturtium*, and

¹ Jour. of Bot. 19: 265.

not be made, as by the reformers, the type of a subsequently published genus, *Roripa*.

It is needless to multiply such examples. Cases in point are many, so numerous, in fact, that the reformers, having gone thus far in the quest of priority, have suddenly been appalled by the amount of change necessary for further advance, and have, accordingly, with no word of explanation, abandoned the pursuit of the principle. But this is stopping the reform not at the goal to which its accepted principles lead, but arbitrarily, and just where it happens to be convenient, surely a disappointing outcome for such an ambitious and widely heralded revision.

This question regarding the type species of a composite genus is not new. It was well discussed by Mr. O. F. Cook² in 1895, when he urged, upon the basis of his studies in the Myxomycetes, that the only satisfactory solution was the uniform acceptance of the first species as the generic type. A subject so important to the Rochester reform should certainly have received the prompt attention of the Nomenclature Committee, but far from taking any definite or satisfactory action which could be a guide to others, the members themselves, as their divergent practices clearly show, have been quite unable to agree upon this point. The majority, it is true, still use *Erysimum*, *Sisymbrium*, *Erigeron*, etc., in their conventional meaning, but one member has boldly faced the issue and refuses longer to accept *Erysimum* in its old sense, since it is clear that its first species was a *Sisymbrium*. All our American species of *Erysimum* are accordingly transferred by him to *Cheiranthus*. This change is carried one step further in a recent American flora,³ where we find that not only our *Erysimums* have gone to *Cheiranthus*, but *Sisymbrium* is called *Erysimum*. As each generic change of this sort implies the ultimate formation of many new binomial combinations, the end of this felicitous settlement of our nomenclature question is not yet in sight.

When questioned as to the uniform acceptance of the first species of a genus as to its type, advocates of the Rochester

² Bull. Torr. Bot. Club 22: 433.

³ HOWELL, Fl. N. W. Am. 1: 38-56.

reform have replied that such a course, while logical, would require *too* great change. It would appear then that the Rochester code is a clever device to bring us stability by causing *a great deal* of change, but not *too much* change. In his recent comments upon the Berlin rules,⁴ Professor Britton propounds the momentous question: Who is to say whether *Elvasia elvasioides* involves tautology? It does not occur to him to ask: Who, in the American reform, is to make the refined distinction between *much* change and *more* change? Yet the two questions in their relative importance forcibly suggest a Berlin mote and a Rochester beam.

Besides this matter of the selection of the generic type, various other questions, relative to their nomenclature, seem as yet unsettled by the reformers. What, it may be asked, is the status of a generic synonym in the first edition of the *Species Plantarum*? Can it be neglected as a "pre-Linnæan" name? Certainly not, for it appears in print subsequently to the beginning of 1753, the date from which priority is reckoned. These generic synonyms, it may be argued, are not properly described, but for that matter the accepted genera of the same work are not described at all. Both, however, are clearly defined by the species. Now under *Psoralea Dalea* L., the name Dalea is used not solely as a specific name, but, a line or so below, as a generic synonym. In other words, even in "Linnæan" times, the first generic name applied to a Dalea was Dalea. Why then do our reformers feel it necessary to change fifty or more species of Dalea to the subsequently published genus *Parosela* of Cavanilles? Nor is this by any means the only instance in which generic synonyms in the *Species Plantarum* are likely to cause trouble. The name *Pedicularis*, for example, as it first appears on page 602, does not represent the genus to which it is now applied, but is a clear synonym of *Bartsia coccinea*, or as it is now called *Castilleia coccinea*. But, having once been applied to a *Castilleia*, how, without violence to the principle of "once a synonym always a synonym," can it be later used for a subse-

⁴Bull. Torr. Bot. Club 24: 419.

quently published plant or group of plants? Such cases are far too numerous to be disregarded, and a consistent or scholarly code, starting from the *Species Plantarum*, should certainly contain a definite statement as to the Linnæan synonyms. The subject cannot be wholly neglected, for both radical and more conservative botanists have, on certain occasions, taken up names which had first appeared as synonyms, and used them to displace others of subsequent but more regular publication. Is such a practice justifiable in some cases and not in others?

While the object of the present article has been to deal rather with the principles than the details of the Rochester nomenclature, a specific instance may be cited to show that even where their principles may be perfectly clear, the reformers do not always live up to them. Of all the changes suggested by the Rochester reform, none has been more unfortunate than the transfer of *Stellaria* to *Alsine*. It involves not merely much specific change but leads to exceptional confusion from the circumstance that there is another large and nearly related genus *Alsine*, which the European botanists generally recognize and show no tendency to abandon. However, from the standpoint of the reformer, this is due to no fault of the Rochester movement, but merely to the perversity of those benighted individuals who as yet fail to accept the light it sheds. So, waiving for the moment all points relative to the justice and expediency of adopting *Alsine* for the greater part of *Stellaria*, I wish merely to defend certain residual rights of the latter genus. It is a long established fact in the common law of nomenclature that if a part of a genus is taken away, the rest must still bear the same name. Now the *Stellaria* of Linnæus contained two distinct generic elements, *Stellaria* and *Cerastium*, for the latter element is represented by *Stellaria cerastioides* L. (*Cerastium trigynum* Vill.; *C. cerastioides* Britton, Mem. Torr. Club 5:150, Britton & Brown, Ill. Fl. 2:28). The only reason why the reformers transfer our *Stellarias* to the Linnæan *Alsine* (a miserable generic failure, made up of *Stellaria media* and a *Spergularia*) is that *Alsine* appears on an earlier page of the *Species Plantarum* than *Stellaria*. But *Stellaria* has exactly the same

sort of priority over *Cerastium*, and if only a part of *Stellaria* goes to *Alsine*, the rest (its other generic element), namely *Stellaria cerastioides* L., must in all justice be retained to stand for *Stellaria*. Its arbitrary transference, as in the *Illustrated Flora*, to the subsequently published genus *Cerastium*, is out of the question in any system where "priority of publication is the fundamental principle of nomenclature." But if *Stellaria cerastioides*, according to priority of place, represents the valid part of *Stellaria*, all the numerous *Cerastiums* must be rechristened under *Stellaria*, unless the reformers find it possible to reexamine *Stellaria cerastioides* and decide that it is, after all, an *Alsine*, a course of procedure which would not greatly strengthen any system.

The facts here enumerated seem fully to justify the conclusion that the Rochester reform, notwithstanding the conscientious endeavors of its advocates, fails to offer a definite or final solution of the nomenclature question. It is perfectly evident that its application of priority, far from being consistent and universal, is subject to certain indefinite and unwritten restrictions, upon which even the reformers themselves cannot agree. The theory of an unrestricted priority from 1753 is most seductive, but it is now clear to many of its former advocates that, while causing much needless change, it secures in the end no greater definiteness nor finality than a priority limited, let us say by the fifty-year clause. Uniformity of practice can only be secured by agreement in any case, and while the fifty-year limit may well give an excellent basis for such agreement, unrestricted priority cannot yet be consistently interpreted by its most zealous advocates.

As former efforts to present in a clear light certain defects in the Rochester nomenclature have called forth prompt and in some cases wholly irrelevant criticism, it seems necessary to say, in conclusion, that the questions here raised regarding *Erysimum*, *Sisymbrium*, *Nasturtium*, *Erigeron*, *Stellaria*, *Cerastium*, etc., are definite difficulties, and as such cannot be satisfactorily answered, to an intelligent public by an unwarrantable accusation of personality nor by vague panegyrics upon priority in general.